

tapered towards each extremity, which is rounded, very prominent and sessile and plump in appearance. *Proper margins* full, rounded and incurved. *Disk* a mere chink. The sporidia are very singular and different from any other known British species.

PLATE VI. fig. 16. *c*, Plant, nat. size; *d*, vertical section of thallus and lirella; *b*, sporidia.

Opegrapha macularis, Ach., and *O. epiphega*, Ach. & E. Bot., seem to be merely states of the same plant. Their structure will be seen from our Plate VIII. fig. 34, which consists of a black carbonaceous perithecium (*a*) which bursts at intervals through the epidermis of the bark, and finally when the whole epidermis is thrown off by it is found to be continuous. It is raised and elevated here and there over the nucleus, and at those points has frequently a longitudinal depression like the rimæform disk of an *Opegrapha* or *Hysterium*. The base of the nucleus is quite naked or destitute of perithecium. The nucleus consists of pale hyaline oblong sporidia (*b*) of considerable size, margined and elevated on simple pedicels, with others of various sizes in different stages of maturity. This structure clearly distinguishes it from *Opegrapha*, and refers it to the genus *Hysterium*, subgenus *Dichæna* of the Fungi.

[To be continued.]

XXI.—Notes on the Ornithology of Ceylon, collected during an eight years' residence in the Island. By EDGAR LEOPOLD LAYARD, F.Z.S., C.M.E.S.

[Continued from p. 131.]

146. *Zoothera* (n. s.?) *imbricata*, Layard.

Among the birds received from Mr. Thwaites is one which I cannot identify with any Indian species, and which may perhaps prove new. I have therefore provisionally named it *imbricata* from its scaled appearance.

Length about 9 inches; of closed wing $4\frac{3}{4}$ in.; tail 3 in.; bill to end of gape $1\frac{1}{4}$ in.; tarsi $1\frac{1}{2}$ in.

General colour of back and upper tail-coverts darkish olive-brown, darker on the head; each feather pales off to the edge, where a black border one line in breadth succeeds. Tail-feathers wholly brown, shafts black. Shafts of wing-feathers dark brown, outer webs reddish brown, inner webs dark brown. On the breast the same style of marking prevails, the colours being pale

rufous yellow darkening into deep rufous with very dark brown edge. Vent and under tail-coverts rufous. Bill corneous. Legs brown.

I am indebted to the kindness of the Zoological officers of the British Museum for the opportunity of examining and describing this and other species.

147. *CISSA PUELLA*, Blyth & Layard, J. A. S. xviii. *Kahibella*, Cing.

This, the most lovely of all our Ceylon birds, was discovered by me along the course of a mountain stream in the jungle near Ambegamoa, and described by Mr. Blyth, *loc. cit.* Dr. Kelaart writes that it is "common in Nuwera Elia, and frequents the fields there, generally in small flocks, in search of worms." In such situations I never saw it; all I have noticed were in the most dense and lonely jungles. The last I procured fell a victim to that curiosity so characteristic of all the jays. I was creeping through some thick jungle to get a shot at a large wood-pigeon, when the *Cissa* flew down from some lofty trees, and coming close to me peered into my face. It came so near that I refrained from firing, lest I should blow it to pieces; neither did I wish to frighten it, lest I should drive it away altogether; I therefore waited till the bird had leisurely surveyed me and flown to a little distance, still watching my movements. This enabled me to shoot it.

Nothing can exceed the beauty of this bird when in full plumage, and with the cere of the eyes and legs still fresh; the contrast between the blue of the former and the crimson of the latter being very striking. It has a loud harsh note, not unlike that of the European jay.

Mr. Thwaites has forwarded several specimens procured in the central province.

148. *CORVUS CULMINATUS*, Sykes. *Andang*, Mal.; lit. Grave Crow. *Goyegamma-caca*, Cing.; lit. High-caste, or Vellally Crow.

The carrion crow is everywhere common in Ceylon, being found inland as well as on the sea-coast, the great resort of the next species. It is found in the deep forests where *C. splendens* never appears, and such is its acuteness of sight and scent, that though the wounded deer may retire to the most tangled brake to die, its covert is invariably revealed to the hunter by these crows, who, congregating in small parties on the surrounding trees, patiently wait till life is extinct to begin their repast in company with the jackals and wild hogs.

As soon as the carrion crow detects an animal lying on the ground, it utters a curious soft modulated "caw," wheeling in circles round the object of its curiosity, beating the air with heavy strokes, and then joining the wings over the back, it sails down and alights within a few feet of its hoped-for prey. These motions are known and understood by all the crows in the vicinity, who immediately flock to the expected banquet. One bolder than the rest now approaches and hops upon the animal's body: as this is not an unusual practice with them whilst searching for ticks, the animal lies still, till the crow peers into its eyes, when, should it be in a state to defend itself, a shake of the head rids it of its dangerous friend, who then, instead of feasting on its eyeballs, performs the grateful office of ridding it of its vermin. Far different, however, is the fate of the wretched animal dying of disease or of the deadly rifle-ball; full well the carrion crow knows the dim eye over which the shadows of death are stealing, and, like the wretches who rob the dying on the field of battle, he hastens its last moments. Plunging its powerful bill into the eyeball of his victim, it tugs at it, despite the feeble struggles which oppose it, and is soon joined by its now bolder companions, some pecking at the eyes, some at the fatal wound or sore, but all select those points where the thinness of the skin, or an abrasion in it, offer an easy access to the entrails: these once reached are torn out and swallowed, but the eye is invariably the first point of attack.

About the villages the carrion crow builds in the cocoa-nut trees: in the jungles it selects a tall tree, amid the upper branches of which it fixes a framework of sticks, and on this constructs a nest of twigs and grasses. The eggs, from three to five in number, are usually of a dull greenish brown colour, thickly mottled with brown; these markings being most prevalent at the small end. Axis $1\frac{1}{2}$ inch, diam. $1\frac{1}{4}$ inch. They are usually laid in January or February.

149. *CORVUS SPLENDENS*, Vieill. *Cagum*, Mal. *Caravy-caca*, Cing.; lit. Low-caste or Fisher Crow, from its frequenting the sea-coast.

The common hooded crow is essentially a "cit," he is never found away from towns, and the denser the population the more frequent is he. He builds his nest in the hibiscus-trees in the court-yard of the Government House, or of the merchant's store, and while in these situations the windows of his white fellow-citizens often overlook his domestic arrangements; he in turn, from his eyrie on the top of the rocking palm, looks down on the lowly huts of the black ones. He levies contributions on all

alike : leave but your breakfast-table for a moment, and as you return, the rustling of hurrying wings, the marks of many feet on the white table-cloth, the gashes in the pat of butter, and the disappearance of plantains and small viands, proclaim who have been the robbers. The old "hopper woman" sits frying her cakes under the lowly "pandal" of her cadjan hut, and over her with head inclined, taking a bird's-eye view of her cookery, sits the "caca;" and now the "*appah*," anglice "hopper," is done, lifted from the pan, and laid on the little circular basket ready for a customer. With a grunt of satisfaction the aged crone surveys her handiwork, and drops her spoon to feel for her beloved betel-pouch; a tiresome little bit of "areca-nut" has got into a corner and the old dame bends over it, unmindful of her charge; a dark figure drops from the roof, and though she is instantly on the alert, and aims an ineffectual blow at the thief, the nice white "*appah*" is borne off. Sometimes however the robber has but a poor hold on it and drops it on the red cabook road; down pounce a host of crows that have been looking on from many a tree, and a scuffle ensues; but anxious at least to cheat them of their booty, if not to retain the damaged article for her own eating, the old woman hurries to the rescue; but this makes matters worse, the castle is defenceless, and unseen foes drop down from beam and rafter or fly in through open doors. The rice-basket is invaded, the chilli box overturned, the dried fish stolen, and lucky is the dame if the crash of most of her little store of crockery and glass, swept to the ground and scattered in shining fragments, does not hastily recall her to her hut.

But in spite of these annoying thefts, the amount of good done by the vast numbers of these birds which frequent our towns is very great; they are the great street scavengers; nothing escapes their quick eyes, everything that can be eaten is devoured as soon as discovered, and early and late they are on the watch for whatever is thrown out; and so nimble are they, that I have frequently seen them catch small bits of carrion, or other matters, before they fell to the ground. They have not the least fear of the natives, and even European children are unheeded by them, and I have seen my boy's hand bitten and bleeding from their attempting to snatch his bread from him. But of the white man and his gun they entertain the most wholesome dread. Point but a stick at one and away it flies, while yet two or three hundred yards distant, and alarms the whole winged fraternity with his cries. Crows flock from all quarters, and sailing high in air, caw in concert till the object of their dread has disappeared. However, should one unwary bird fall before the gun, his companions hasten to assist him, and will often raise him up, and fly so heedlessly round the head of the fowler, that a dozen

perhaps may be shot before the remainder, conscious of their danger, seek safety in flight.

Their nests are loose structures of sticks lined with hair, built in cocoa-nut or other trees, and the eggs are 1 in. 7 lines long by 1 in. 1 line broad. The general colour is a light bluish green, mottled more sparingly than those of the carrion crow with dark brown, the markings also being at the obtuse end; but in these particulars considerable variation occurs in both species, and I have some eggs in which the markings are almost obsolete.

150. GRACULA RELIGIOSA, Linn. *Halleleynia*, Cing.

Common along the western coast of the island. Mr. Brodie procured numerous specimens at Putlam; it extends sparingly into the Kandian provinces, where it is replaced by

151. GRACULA PTILOGENYS, Blyth, J. A. S. xv. 285.

This is the "Hill Maina," the largest and most beautiful of our species; the yellow lappets of the ears contrasting elegantly with the purple-black of the velvety feathers on the head and neck.

In habits these two species are similar, generally flying in flocks varying in numbers according to the families who join in them; they perch on the topmost branches of trees, and feed on fruits and berries. They also frequent pasture lands, and attend the grazing cattle, on whose backs they often alight in search of ticks and other insects; they likewise scratch in ordure for the coleoptera which burrow therein. They breed, so the natives tell me (I have never been fortunate enough to obtain their nests), in the palm-trees about villages, placing their nests on the broad ends of the old fronds which lie horizontally. The same authority informed me that the structure was sticks lined with hair of cattle and the fibres of cocoa-nut, and that the eggs were bluish. Both the species are highly prized by the natives for the facility with which they acquire the power of imitating certain sounds of the human voice. A highly educated bird will often sell for 20 rupees or more; they are kept in cages made entirely of bamboo, in the manufacture of which the natives are very skilful. In captivity they are cheerful, active and prying, exhibiting very much the characteristics of our English magpie, and feeding upon almost all the substances, raw or cooked, eaten by their masters. Their natural note is a hoarse cackling or loud whistle, uttered in the same clamorous manner as that of our English starling. An egg said to belong to this species is—axis 13 lines, diam. 10 lines; colour a beautiful darkish blue; in shape it is much more rounded than that of *Acridotheres tristis*.

152. PASTOR ROSEUS, Linn.

I found large flocks of these birds at Pt. Pedro in July, but not one specimen, out of the many which fell at several discharges from a large gun into the huge flocks which for several days frequented one locality, proved an adult bird. They were very wary, and I could only approach them by creeping up behind hedges and then raking them as they rose with my largest gun. At the end of about a week they disappeared and I saw no more of them. They were entirely unknown to the natives. Mr. Brodie, my esteemed friend and fellow-worker in Ceylon zoology, found a few at Putlam and noticed their extreme wildness; they perched on the summit of the low bushes which dotted the open plains, and he only succeeded in obtaining a single specimen, although he followed them for several days.

153. HETÆRORNIS PAGODARUM, Gmel.

This species is not uncommon in the north of the island, but I have never met with it in the south. Dr. Kelaart found it in Fort Frederic, at Trincomalie. I think it breeds at Pt. Pedro, as I shot several young birds in September with the cere still on the base of the bill. They frequented the ploughed lands in small flocks of four, five or six individuals, and fed on small insects and grubs. Dr. Kelaart includes

154. HETÆRORNIS MALABARICA, Gmel.

and

155. HETÆRORNIS CRISTATELLA, Linn.

Sed non vidi.

156. HETÆRORNIS ALBOFRONTATA, Layard, n. s.

Another of the new species in Mr. Thwaites's collection, if new it really is. It may be *Pastor Senex*, Temm., as it agrees tolerably well with the short description given in Prince Bonaparte's *Consp. Avium*, p. 419, but that description is so concise that I cannot be sure of it; I therefore name it provisionally *H. albofrontata*.

Length about 8 inches, of closed wing $4\frac{1}{4}$ in., tail 3 in., bill to end of gape $1\frac{1}{6}$ in., tarsi 1 in. General colour of back, tail and wings black, with a green gloss. Forehead albescent; hinder feathers of crest brownish black, with albescent shafts. General colour of breast, throat, vent and under tail-coverts albescent, the shafts of the feathers on the throat shining white.

Specimens are in the British Museum.

157. *ACRIDOTHERES TRISTIS*, Linn. *Gong cowdea*, Cing. *Nacanam patchy*, Mal.

This is the common Maina of the country; they frequent meadows in search of worms and grubs of insects, not refusing perfect coleoptera when they come in their way; they scratch among the ordure of cattle (whence their native appellation), and scatter it far and wide over the fields, thus assisting the lazy native husbandman; and the amount of labour they perform is considerable, as they generally go in parties of six or eight, and often in flocks of forty or fifty. Like the other mainas also they often perch on the backs of cattle in search of ticks.

They breed in hollow trees, making a nest of fibres and dry grasses, and deposit from three to five light blue eggs much resembling those of the European starling in shape, but rather darker in colour. Axis 13 lines, diam. 10 lines. Young birds hatched in March or April.

[To be continued.]

BIBLIOGRAPHICAL NOTICES.

Symbolæ ad Monographiam Marseniadarum. Auctore RUDOLPH BERGH. 4to. 1853. Plates. Copenhagen.

THIS work is a most interesting contribution to malacological science by a young and ardent Danish naturalist, giving a very complete detailed account of the scientific history, the anatomy, and the zoological classification of these hitherto little-known Mollusca, illustrated with excellent plates of the animal, their anatomy, including the teeth and the prehensile organs of the mouth, (which I believe have only hitherto been observed by Messrs. Alder and Hancock in this country,) and of the shells of the different species. Unfortunately the history and anatomy is in Danish, but the characters of the genera and species are in the Latin language.

The author divides the family *Marseniadæ* into three genera:—
 1. *Marsenia*, containing two subgenera; *Marsenia* with eighteen species, and *Chelynotus* with four species, having three series of teeth and an ear-shaped spiral shell. 2. *Onchidiopsis*, Beck (= *Oncophora*, Bergh), with seven series of teeth, and a horny oblong non-spiral shell, with two species, confined to the North Sea. 3. *Marsenina*, Gray, also with seven rows of teeth, but with partly exposed ear-shaped spiral shell, containing only two species, from the North Sea. It is probable that the two latter genera may eventually form a separate family, or form a part of *Velutinidæ*.